

REMARKS

Applicant submits an Excess Claim Fee Payment Letter for one (1) additional independent claim.

Claims 1-4, 6-10, 12-15, and 17-21 are all the claims presently pending in the application. Claims 1-4, 6-10, 12-13, and 15 are amended to more clearly define the invention, claims 5, 11, and 16 are canceled, and claims 17-21 are added. Claims 1, 3-4, 6-8, and 10 are independent.

These amendments are made only to more particularly point out the invention for the Examiner and not for narrowing the scope of the claims or for any reason related to a statutory requirement for patentability.

Applicant also notes that, notwithstanding any claim amendments herein or later during prosecution, Applicant's intent is to encompass equivalents of all claim elements.

Applicant gratefully acknowledges the Examiner's indication that claims 10-13 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. This Amendment amends claim 10 into independent form including all of the limitations of the base claim and any intervening claims to place claim 10 into condition for allowance. However, Applicant respectfully submits that all of the claims are allowable.

Claims 1-9 and 14-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Oka et al. reference in view of the Hein reference. Claim 16 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the Oka et al. reference in view of the Hein reference and further in view of the Polakowski reference.

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

Conventional power steering devices do not operate a steering assist motor under low torque loads. Therefore, under these low torque loads, the steering assist motor acts as a torsional drag element which deteriorates the feel of the steering.

The present invention overcomes this problem by providing an elastic member that has a first torsional elastic modulus and a second torsional elastic modulus. In other words, the claimed invention provides an elastic member with a two-stage torsional elastic modulus. In this manner, the steering feeling during low torque, such as during small steering angle inputs, is significantly improved (page 3, lines 9-14).

A first exemplary embodiment of the invention, as recited by, for example, independent claim 1, provides the two-stage torsional elastic modulus by providing an elastic member having a radially and axially extending plate-shaped portion and at least one of the elastic member and first and second members having a circumferentially extending projection at an outer periphery.

A second exemplary embodiment of the invention, as recited by, for example, independent claim 3, provides the two-stage torsional elastic modulus by providing an elastic member that has a projection with a bifurcated structure.

A third exemplary embodiment of the invention, as recited by, for example, independent claim 7, provides the two-stage torsional elastic modulus by providing an elastic member that has a first layer with a first elastic modulus, and a second layer with a second elastic modulus that is higher than the first elastic modulus.

II. THE 35 U.S.C. § 112, SECOND PARAGRAPH REJECTION

The Examiner alleges that claims 1-16 are indefinite.

Examiner Lum alleges that the independent claims are indefinite. While Applicant submits that such would be clear to one of ordinary skill in the art to allow them to know the metes and bounds of the invention, taking the present Application as a whole, to speed prosecution claims 1, 3-4, 6-9, and 15-16 have been amended in accordance with Examiner Lum's very helpful suggestions.

Applicant respectfully requests withdrawal of this rejection.

III. THE PRIOR ART REJECTIONS

Regarding the rejection of claims 1-9 and 14-15, the Examiner alleges that the Hein reference would have been combined with the Oka et al. reference to form the claimed invention. Applicant submits, however, that these references would not have been combined and, even if combined, the combination would not teach or suggest each and every element of the claimed invention.

Applicant submits that none of the applied references teaches the features of the claimed invention including: 1) at least one of the elastic member and first and second members having a circumferentially extending projection at an outer periphery (independent claims 1 and 4); 2) an elastic member that has a projection with a bifurcated structure (independent claims 3 and 6); and 3) an elastic member a first layer having a first elastic modulus, and a second layer having a second elastic modulus that is higher than said first elastic modulus (independent claims 7 and 8). Each of these structures is capable of providing a two-stage torsional elasticity.

Clearly, the Oka et al. reference does not teach or suggest any of these features.

Indeed, the Examiner does not allege that the Oka et al. reference discloses these features.

The Hein reference does not remedy the deficiencies of the Oka et al. reference.

Rather, the Hein reference discloses a flexible coupling 12 that has radially extending inner portions 25 and outer portions 26 extending radially from and beyond the inner portions 25. (Col. 2, lines 31-34).

Clearly, the flexible coupling 12, that is disclosed by the Hein reference include a circumferentially extending projection at an outer periphery as recited by independent claims 1 and 4.

Further, with respect to independent claims 3 and 6, Applicant respectfully submits that none of the applied references teaches or suggests an elastic member that has a projection with a bifurcated structure.

Rather, the Hein reference merely discloses a projection having a radially outwardly diminishing stepped structure (col. 2, line 60 - col. 3, line 5).

Additionally, with respect to independent claims 7 and 8, none of the applied references teaches or suggests an elastic member having a first layer with a first elastic modulus, and a second layer with a second elastic modulus that is higher than the first elastic modulus.

Indeed, the Examiner does not allege that any of the applied references teach or suggest an elastic member having any layers at all, let alone a first layer having a first elastic modulus, and a second layer having a second elastic modulus that is higher than the first elastic modulus.

Further, Applicant respectfully submits that these references would not have been

combined as alleged by the Examiner. Indeed, the references are directed to completely different and unrelated matters and problems.

Specifically, the Oka et al. reference is concerned with providing a joint for a steering assist system that is capable of damping the vibration of a worm shaft and that permits relative rotation between shafts when the rotational resistance is increased abnormally. (Col. 2, lines 10 - 31).

In stark contrast, the Hein reference is concerned with providing a flexible coupling that does not operate under a shear load, does not require bonding, and also provides a multiple resilient spring rate. (col. 1, lines 45-65).

One of ordinary skill in the art who was concerned with damping the vibration of a worm shaft and that permits relative rotation between shafts when the rotational resistance is increased abnormally as the Oka et al. reference is concerned would not have referred to the Hein reference because the Hein reference is concerned with the completely different and unrelated problem of providing a flexible coupling that does not operate under a shear load, does not require bonding, and that provides a multiple resilient spring rate. Thus, these references would not have been combined.

Lastly, the Examiner has clearly failed to present a *prima facie* case for obviousness.

Section 2142 of the MPEP states:

“To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.” (Emphasis added).

The Examiner has not provided any suggestion or motivation at all to combine the references. Therefore, the Examiner has clearly failed to present a *prima facie* case of obviousness.

Applicant respectfully requests withdrawal of the rejection of claims 1-9 and 14-15.

IV. FORMAL MATTERS AND CONCLUSION

The Office Action objects to the drawings because “the ‘elastic member 45’ is not correctly depicted with alternately-heavy cross-hatching.” (Emphasis original). Applicant respectfully traverses this objection.

In particular, as clearly illustrated in M.P.E.P. § 608.02, alternately-heavy cross-hatching is used to illustrate “section of synthetic resin or plastic” and is not used to represent an elastic material. None of the claims require the use of a synthetic resin or plastic.

Therefore, Applicants respectfully submit that the drawings do not require correction. Should the Examiner continue to have concerns over the drawings, Applicant invites the Examiner to contact the undersigned to address this important matter.

In view of the foregoing amendments and remarks, Applicant respectfully submits that claims 1-4, 6-9, 12-15, and 17-21, all the claims presently pending in the Application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

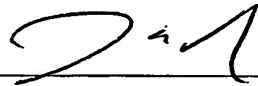
Should the Examiner find the Application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date:

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